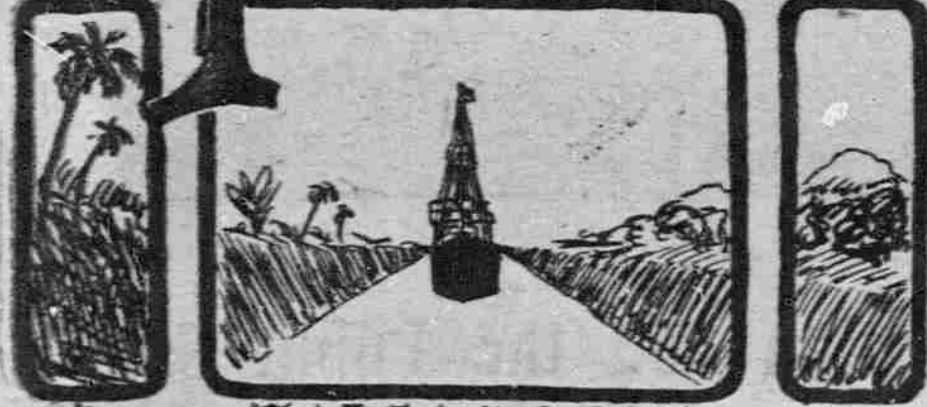




# THE PANAMA CANAL



## HAWAII AND THE PANAMA CANAL

By Lorin A. Thurston

It is a moral certainty that within the next 5 or 7 years the Panama Canal will be open for business and that a great shipping business which now goes around south of the American and Asiatic Continent, will use the canal and cross the Pacific to Asia and Japan.

There are those who point to the fact that the line from Panama to the Orient via San Francisco is shorter than via Honolulu, and claim that by reason thereof the great trade which will flow through the canal across the Pacific will make San Francisco the port of call instead of Honolulu.

This argument ignores the fact that many things affect and decide routes of travel besides distance.

The shortest distance to the top of a bluff is straight up the face of it, but the road to the top never goes straight up. It winds and circulates about, covering two or three times the direct distance from top to bottom.

The shortest distance from San Francisco to St. Petersburg, is via the North Pole; but no one ever takes that route.

There are good reasons for this, and there are good reasons why the bulk of trans-Pacific commerce will go via Honolulu instead of via San Francisco.

Some of these reasons are as follows:

**SEA SMOOTH—WIND GENTLE.**

1. The sea is normally smooth and the winds gentle, on that portion of the Pacific extending from Panama to Hawaii, and from Hawaii to the Asiatic coast.

On the other hand, the normal weather conditions across the north Pacific, on the great circle line, are a tempestuous sea and stormy winds.

The bulk of the trans-Pacific traffic will be carried on in comparatively low powered steamers, to whom such weather conditions are a serious hindrance.

A few days' heavy weather will use up far more fuel on the shorter route than would be expended on the greater distance of the longer but smoother route.

This very fact has been several times illustrated by Government transports sailing from Seattle and vicinity for the Philippines via the northern route, which, after bucking the giant seas of the stormy north, have given up the struggle and come south to the balmy airs and placid waters of Hawaii; and, after recouling, departed in peace, "floating through Paradise on an even keel," as the poet phrases it.

**WIND AND CURRENT FAVORABLE.**

2. Stormy, rough weather is disadvantageous to economy of steamer operation, no matter what direction the wind is from; consequently, other things being equal, smooth water will always be chosen. But if in addition to smooth water a fair wind and favoring current is to be had, a strong additional argument in favor of the smooth route is presented.

It is an established geographical fact that in the North Pacific, in the latitude of San Francisco, the prevailing wind blows strongly from the west sweeping well down toward the coast of Mexico. The ocean current also sets in the same direction, frequently running from one to two knots an hour.

A vessel bound from Panama to China, via San Francisco would therefore be steaming against wind and current, for the entire distance of approximately 10,000 miles.

On the other hand, in the latitude of Hawaii, the prevailing wind, blowing nine months in the year, is a moderate North East trade wind, while the current flows steadily from east to west.

West bound steamers are therefore reasonably certain of not only smooth water, but of friendly winds and favoring currents.

These two favoring conditions do not of course exist with relation to east bound ships, although the wind being northeast and the course south easter-

ly the wind is not entirely a head wind.

**ABSENCE OF FOG.**

3. The harbor of San Francisco, and in fact the entire North Pacific, is beset with fogs during the greater part of the year.

One of the favorite arguments of the San Francisco route theorists, is that Unalaska or Dutch Harbor in the Aleutian Islands, which lie the same distance from San Francisco that Honolulu does, will make an ideal midway coaling station for the Panama-Hongkong route.

The ports named are not only the storm center of the North Pacific, but are among the foggiest ports in the world. They are not infrequently so beset with fog that for a week, and even for weeks, at a time, navigation is practically suspended in their vicinity.

These fog conditions are responsible for a never ending series of wrecks and disasters. The Rio Janeiro is only the last of a long series of victims to the fog terror of the Northern Pacific.

As against this deterrent to safe and economical commerce, fog is unknown in the latitude of Honolulu, from Panama to Hongkong. The mariner upon the Honolulu route is certain that, day or night, whatever obstacles there may be to navigation, they will be visible; and seeing an enemy is half the task of conquering him.

**FAVORING TIDES.**

The variation of the tides at Honolulu is only about fifteen inches. It is only two feet in extreme spring tides. As a result there are no violent currents to be reckoned with, there is no waiting for high tide on the bar, there are no delays night or day.

With clear, mild weather; 34 feet of water on the bar at low water; no endangering currents, and with deep water wharves in an absolutely land locked and safe harbor within half a mile of the high sea, a through steamer can arrive, enter the harbor, dock, coal, water and depart in less time than it frequently takes a vessel to get inside the Golden Gate at San Francisco.

It is only upon the rarest of occasions that an ocean steamer attempts to enter San Francisco if it arrives after dark. It was during an attempt to enter just at daybreak that the Rio Janeiro tragedy took place.

The largest steamers also have to wait for high tide, in order to cross the bar safely.

At Honolulu, Ocean steamers arrive and depart as freely at low as at high tide; and 12 o'clock midnight is as one with 12 o'clock noon, so far as safety of the ship is concerned.

This ability to proceed promptly is good on the average for a day or more in favor of the Honolulu route over that by way of San Francisco.

**DESERTION OF SEAMEN.**

5. The sailor man's love for a sea life is proverbial; but no less well known, especially to the distracted captain who wants to pursue his voyage, is the fact that after a long ocean voyage Jack's consuming desire is to get ashore, and away from his ship. He frequently abandons his clothes and the wages due him, in his haste and anxiety to accomplish this object.

Ships are delayed for days, and even weeks, through desertion of crews, and laws authorizing their arrest and return to the ship are dead letters in such great cities as New York and San

Francisco, where a man can be more easily and completely lost in fifteen minutes, than in a year's exploration in the heart of Africa.

On the other hand, in a city of the size of Honolulu, every stranger is immediately recognized as such, and a runaway sailor is located and returned to the ship in a few hours.

This reason for preferring the Honolulu over the San Francisco route may appear frivolous to the uninitiated; but to those who know the trials and tribulations of masters and owners of deep sea ships, it will appeal as a strong factor in considering the relative merits of the San Francisco and Honolulu routes.

**QUICK DESPATCH.**

San Francisco is a great city, and is rapidly growing greater. The great field of its activities lies inland. The arrivals by sea and its over sea commerce are but incidents, items in a great whole.

To Honolulu the over sea commerce, the arrival and departure of deep sea ships, is the alpha and omega of its existence. Everything that it imports and everything that it exports passes by sea. Everyone who goes anywhere and every one who comes from anywhere travels by sea.

These two diametrically opposite conditions have created a habit of mind, a spirit and method of treatment of shipping that markedly characterizes the two ports.

At San Francisco the customs, quarantine and other officials, everyone who

has to do with ships, take their leisurely time to board and pass arriving vessels. No arrival after office hours is allowed to interfere with official dignity and repose. The ship and her officers, passengers and crew wait until the next morning before they so much as see an officer, and when, at their convenience, the officers do appear, they take their time to the matter.

At Honolulu, on the other hand, where all commercial as well as social life hinges upon and circulates around, and is vitally affected by over sea connections, arrivals and departures, promptness of inspection and despatch, night as well as day, are the rule and take place as a matter of course.

It is not the difference in the officials at the two ports. It is the difference in the environment and in the conditions that will ever continue, that give, and will continue to give to over sea ships a higher position and secure to them better and prompter attention and speedier despatch in Honolulu than in San Francisco.

It is submitted that, whether Hawaii is the half-way house for all of the trans-Pacific business or not, enough has been shown above to give good reason to believe that it will not, upon the opening of the Panama canal, become the sequestered sleepy hollow of the world, as has been predicted by would-be prophets, but that it will get a fair share of the benefits to be derived from the tide of commerce which will within the next few years sweep past our shores.

## Building the Canal

A sea level canal would be less expensive to maintain and less expensive to operate, would save time in passage through it, and could be widened and deepened when required, without interfering with traffic. John F. Wallace, Chief Engineer of the Isthmian Canal.

At a meeting of the House Committee Interstate and Foreign Congress, held at Washington on December 18, John F. Wallace, Chief Engineer of the Isthmian Canal, gave the committee the benefit of his investigations so far made regarding the engineering tasks to be performed in the construction of the big ditch. Wallace made this explanation of the general problem:

"To determine the most feasible plan for the construction of the canal will require a most careful and comprehensive examination, not only of surface conditions, but the sub-surface must be explored."

"After following the valley of the Chagres to Gamboa, the line of the canal follows a tributary called the Obispo up the summit of Culebra, and thence follows the valley of the Rio Grande into the Bay of Panama. The summit at Culebra was originally about three hundred feet above the sea level, and is the lowest point in the divide along the entire length of the Isth-

mus of Panama. The plan of the former commission provided for a dam of practically 100 feet in height above sea level, at Bahia, with a water level of ninety feet above sea level. This place was selected on account of the fact that at that point the hills on either side of the Chagres come comparatively close together, being about fifteen hundred feet apart, and from the surface indications it seemed a favorable place for the construction of a dam. But the indications are that this locality would be an unfavorable and expensive one for the construction of a high dam.

"The first plan to be considered, the one estimated upon by the former commission, is the possibility and probability of a high dam or proper foundation for a high dam at Bahia, upon which depends the advisability of constructing a high level canal, with the surface of the water ninety feet above sea level."

"The second plan under consideration is a summit level of sixty feet above sea level. Constructing a canal on this plan admits of two different methods of treatment: First, The construction of a dam 60 feet above sea level at Bahia, with two locks of thirty feet, there being two locks on the western slope; second, the construction of a dam sixty feet above sea level at Gatun, eight miles from Colon, with two thirty-foot locks in the same vicinity. The adoption of a sixty-foot level also will render it necessary to construct a dam at Gamboa, in order to provide a reservoir to accumulate water enough during the wet season to furnish water for the summit level of the canal."

### OTHER LEVELS POSSIBLE.

"The construction of a dam at Gamboa in this connection would also control the Chagres River, except that it would be necessary to provide a safety spillway by the construction of a tunnel some eight miles in length through the divide, discharging the surplus waters of the Chagres into the headwaters of the Juan Diaz, or the alternative plan of constructing a tunnel four miles long through the divide, separating the Chagres basin from the headwaters of the Gatunillo, a stream that enters into the Chagres Valley at Gatun. Should this latter course be adopted it would be necessary to construct an auxiliary channel for the Chagres from Gatun to the sea in order to divert its floodwaters into the bay westward of Colon."

"The third general plan under consideration would be the construction of a canal with a 20-foot level above sea with a single lock at Miraflores, and a single lock at Bahia, or in the immediate vicinity; the construction of the Gamboa dam to be required in this instance the same as in the 60-foot level plan."

"The fourth plan would be the construction of a sea level canal with a tidal lock at Miraflores. In this connection it is necessary to explain that while the mean sea level of the Pacific and the Caribbean are the same, high tide in the Bay of Panama rises ten feet above mean sea level and falls ten feet below whereas, the fluctuation of the tide of the Caribbean at Colon is less than two feet. The construction of a dam at Gamboa with the necessary spillways as noted in the previous plan would be the same under the sea level plan as under the 30 or 60 foot level."

"The construction of the Gamboa dam would provide the water supply for the entire line of the canal, including the cities of Panama and Colon. It also would provide a power plant for the generation of electric power sufficient to furnish ample power for the operation of the Panama Railroad and for the operation of any machinery that might be used in the construction of the canal. It would require two years to construct this dam and, roughly estimated, its cost, including spillways, would be between \$15,000,000 and \$16,000,000, not including the power plant."

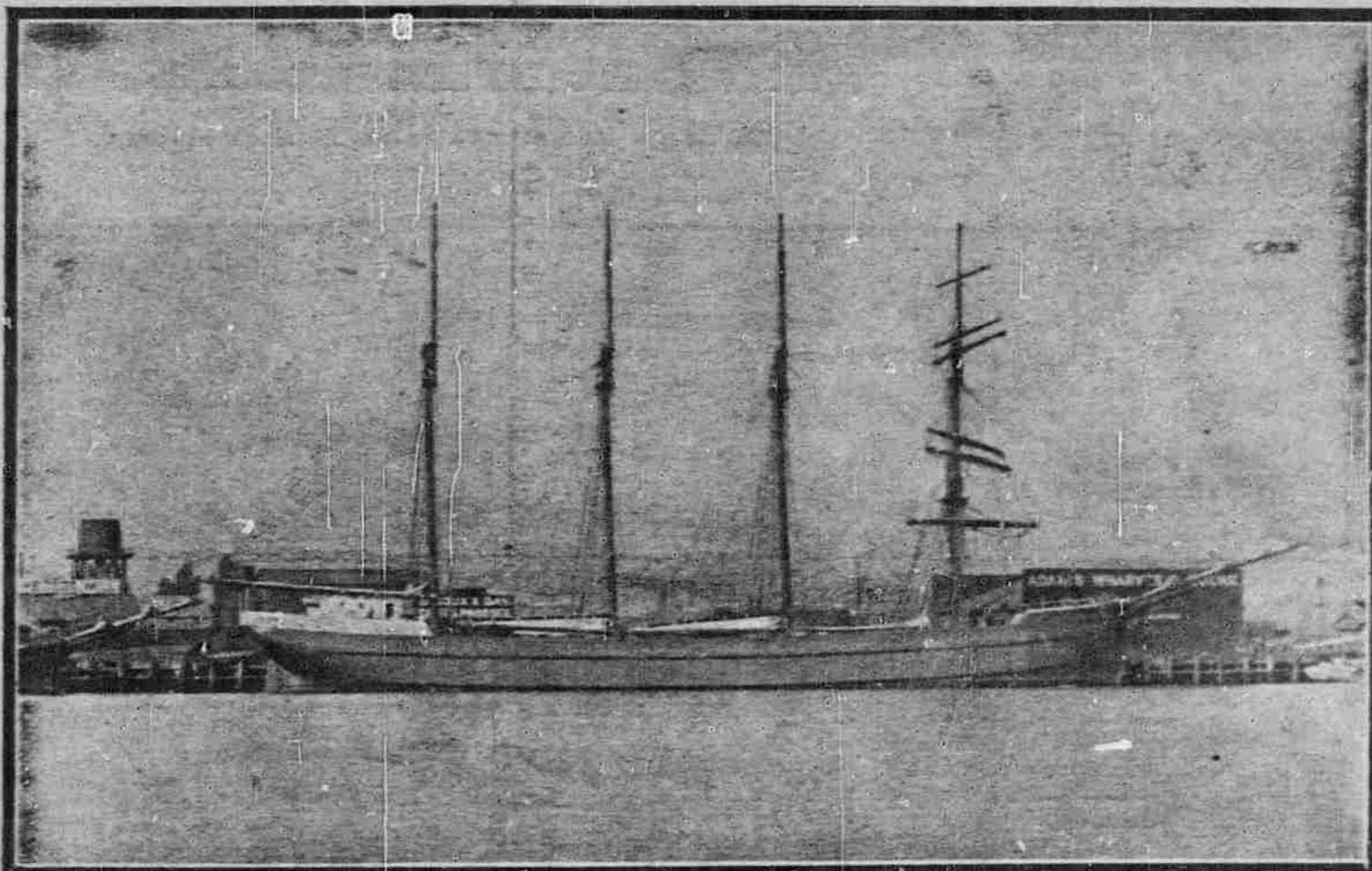
### GREAT SUMS INVOLVED.

Asked by members of the commission for an estimate of the cost of the various plans, Wallace said the best estimate that could be made at present would be based on the estimate of the former commission of \$200,000,000 for a ninety-foot level. Figuring with this as a basis, the sixty-foot level canal would cost \$25,000,000, could be open for traffic in ten years, and fully completed in twelve years; the thirty-foot level would cost \$250,000,000, could be open for traffic in twelve years and completed in fifteen years; the sea level canal would cost \$300,000,000, could be open for traffic in fifteen years and completed in twenty years.

Wallace stated that the excavation for the Culebra cut was the feature of the construction of the canal that took the time. He said:

"Upon the economical and efficient handling of material from Culebra depends the cost and time it would take to complete the canal. Every other question and every other problem connected with the entire work is subordinate and inferior to the problem of the Culebra cut; that is the principal problem of this work."

"Work is now going on in the cut, one American steam shovel and some of the French machinery being in operation. Fourteen American steam shovels have been purchased, one of which is being set up. The others are to be delivered at the rate of one a month. During October 3185 men were on the payrolls of the commission. Of these 2166 were laborers. More laborers are to be employed in the immediate future."



Barkentine Fullerton, First Vessel in the Hawaiian Oil Trade.

## ...Gas System for Honolulu...

The Honolulu Gas Company has closed all contracts for its works, and expects to have its pipes laid and to be ready to supply gas for fuel and for illuminating purposes not later than the first of July.

As a matter of fact, it is anticipated by the gentlemen at the head of the concern that it may be ready for work even earlier than that, but it is certain that the date in question will see the works started.

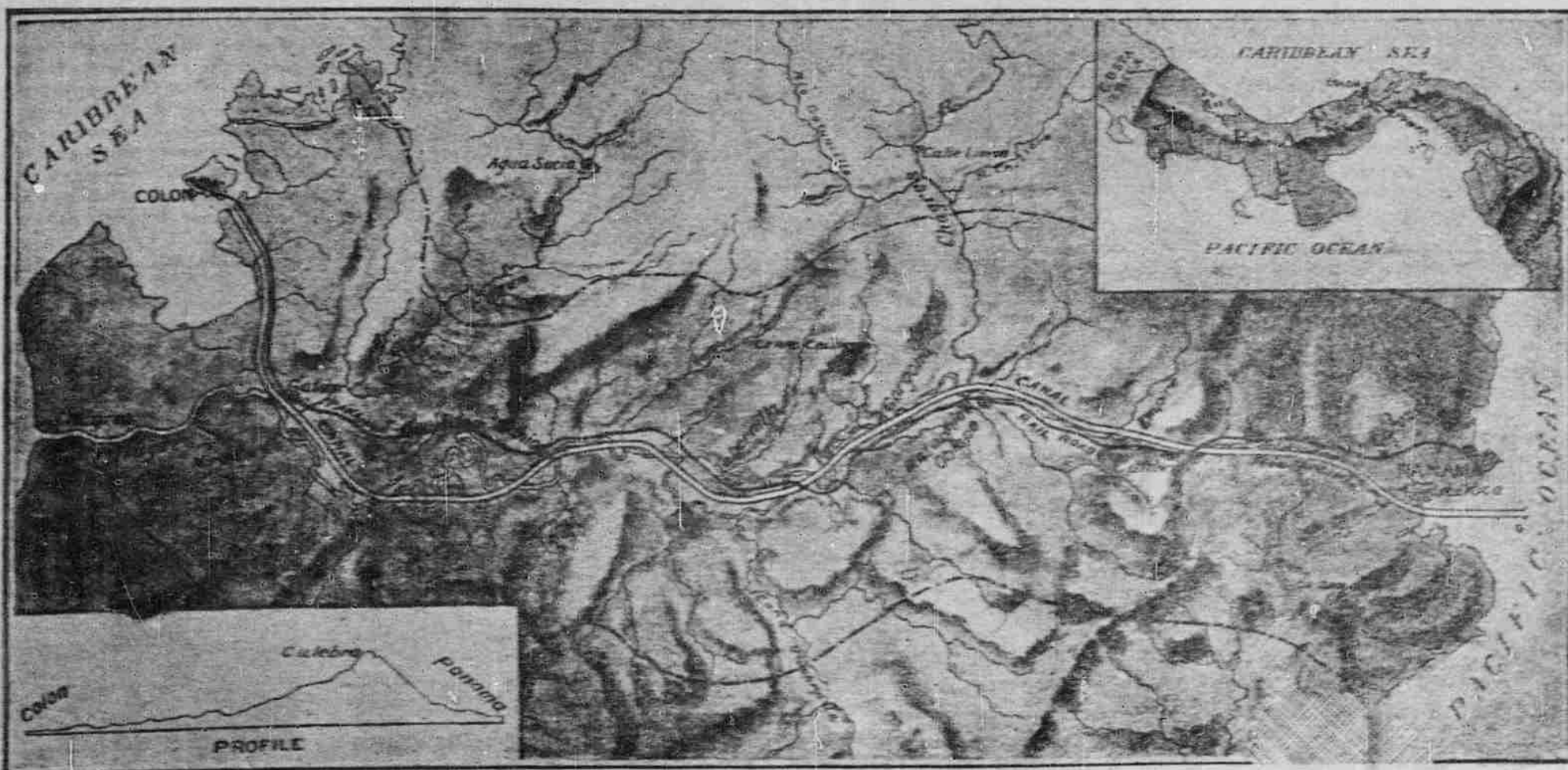
The struggle of the gas company to get legal permission to get upon its feet has been going on for a number of years past. It has always had the financial ability to stand alone, being backed by some of the strongest men in Honolulu, but mere money can do little in the promotion of an enterprise

of this kind without a charter from the legislature that is a condition precedent to the business of supplying the public with light and fuel by means of conduits in the public streets.

At three sessions of the legislature, one of them the legislature of the Republic of Hawaii, Mr. W. R. Castle sought to obtain a charter for a company to supply gas for fuel and illuminating purposes, to the city of Honolulu. At the first session of the Territorial legislature, in 1901, the franchise bill asked for was passed, but it was vetoed by Governor Dole because of a defect in the provisions of the bill asking for the necessary authorization from the Congress of the United States to grant the charter.

The matter went over then until the session of 1903, when the charter bill was finally passed and signed, and the necessary authorization obtained in due form from Congress. That body, however, cut down the rate that it was proposed to charge for gas from \$2.50 to \$2.25 a thousand feet.

Being thus set upon its feet in a legal way, the Honolulu Gas Company proceeded to enter into arrangements to put down pipes and construct its plant. First, it was necessary to decide upon the kind of gas that could be manufactured most conveniently, and correspondence was opened with various experts in the business of making gas. The decision was in favor of (Continued on page 15.)



MAP OF THE PANAMA CANAL ROUTE.